

AMENDMENTS TO THE DRAWINGS

Applicant has revised FIG. 3, which is shown on the Replacement Sheet attached to this Response. Applicant has substituted the open markers for the solid markers in as-filed FIG. 3 to enhance the clarity of the data in the range 0.05 to 0.12 nm⁻¹.

REMARKS

I. **Status Of The Claims And The Rejections**

Applicant has amended the 4th paragraph on page 1 of the specification to correctly identify Chinese Patent No. is ZL89213334. An accompanying Fourth Supplemental Information Disclosure Statement ("IDS") refers to this Chinese patent. Applicant previously filed a Third Supplemental IDS. Applicant respectfully requests that the Examiner consider the Third Supplemental IDS and the Fourth Supplemental IDS in the next response.

Applicant has attached a replacement sheet for FIG. 3, to clarify the locations of the circles, triangles, and squares in the graph per paragraph 4 of the Office Action.

Claims 1–12 are pending in the application. Claims 9–12 stand rejected under § 101, based on the assertion that they are not supported by either a specific and substantial utility or a well established utility. Additionally, claims 9–12 stand rejected under §112, first paragraph. The Office Action alleges that one skilled in the art would not know how to use the claimed invention. (See Office Action, page 3, 2nd paragraph.) Claims 1–12 stand rejected under 35 U.S.C. § 103(a) for alleged obviousness based on CN ZL94113646.9 to Wenhao ("Wenhao '646.9") in view of U.S. Patent No. 5,985,153 to Dolan et al. ("Dolan '153"). Applicant respectfully traverses the rejections.

Applicant has amended claim 9 to make claim 9 an independent claim and to incorporate a portion of claim 11. Applicant has cancelled claim 11. Applicant has also amended claims 9 and 10 to correct a typographical error. Applicant has added new

claims 13, 14, and 15, which depend directly or indirectly from claim 9. These claim amendments are sufficiently supported by the specification and do not raise any Section 112 issues. Applicant respectfully requests reconsideration of the claims.

II. Rejections under 35 U.S.C. §101

Contrary to the assertion in the Office Action, claims 9–12 comply with Section 101. The Office Action fails to establish a *prima facie* showing that the asserted utility is not specific and is not substantial, that the asserted utility is not credible, or that no specific and substantial utility is disclosed or is well-established as is required. (See M.P.E.P. §2107 II.)

Moreover, Applicant submits that claims 9-12 clearly define statutory subject matter. For example, the preamble of amended claim 9 recites "A method for preparing a fuel oil . . .," i.e., a process.

A person of ordinary skill in the art would immediately appreciate why this claimed invention is useful, based on the characteristics of the invention. This same person would also immediately appreciate that the utility is specific, substantial, and credible. In this regard, Applicant asserts that the claimed invention is useful for a particular purpose. For example, Applicant's specification describes that the claimed method provides a fuel oil that can be used in all equipment or devices that burn fuel. (See application page 5, first sentence.) The specification describes a specific example, namely that the fuel oil may be used as an energy source for an internal-combustion engine. (See page 5, second paragraph.) Applicant respectfully submits that one skilled in the art, in view of Applicant's disclosure, would appreciate that the specific and substantial utility is

credible. For example, Applicant submits that the testing results beginning on page 11 of the application, particularly Example 6, is probative evidence that supports the assertion. For these reasons, Applicant respectfully requests that the Section 101 rejections of claims 9, 10, and 12 be withdrawn.

III. Rejections Under § 112

Claims 9–12 are sufficiently enabled by the specification. The standard for determining whether the specification meets the enablement requirement is whether experimentation needed to practice the claimed invention is undue or unreasonable. (See M.P.E.P. §2164.01, *In re Wands*, 858 F.2d 731 (Fed. Cir. 1988). Some of the factors that must be considered are (A) the breadth of the claims, (B) the nature of the prior art, (C) the state of the prior art, (D) the level of one of ordinary skill, (E) the level of predictability in the art, and others. (See M.P.E.P. §2164.01(a).) Moreover, this section of the MPEP states that

[i]t is improper to conclude that a disclosure is not enabling based on an analysis of only one of the above factors while ignoring one or more of the others. The examiner's analysis must consider all the evidence related to each of these factors, and any conclusion of nonenablement must be based on the evidence as a whole. (Emphasis added. See M.P.E.P. §2164.01(a).)

The substance of this rejection, on page 3 of the Office Action, fails to address many of the relevant factors. Thus, this rejection falls short of the requirements set forth in the MPEP for establishing a *prima facie* case of lack of enablement. Consequently, Applicant respectfully requests withdrawal of this Section 112 rejection of claims 9, 10, and 12.

In further support of the request to withdrawal the rejection,

Applicant submits that an analysis of the factors (B) nature of the prior art and (C) state of the prior art weigh in favor of the conclusion that the specification enables claims 9-12. The nature of the prior art and the state of the prior art are each described in the section of Applicant's application entitled "Background art." In this regard, the Office Action alleges that one of the Chinese patents found in the Background art section, i.e., China Patent ZL94113646.9, supports an obviousness rejection of these claims. Applicant submits that this is evidence that the specification enables claims 9-12. Furthermore, Applicant asserts that when each of the remaining factors is analyzed, as is required, the only conclusion which may be drawn from the evidence as a whole is that claims 9-12 are sufficiently enabled by the specification.

IV. Rejections under 35 U.S.C. §103(a)

Claims 1-12 are nonobvious over Wenhao '646.9 in view of Dolan '153. Section 2141 III. of the MPEP states that "[t]he key to supporting any rejection under 35 U.S.C. 103 is the clear articulation of the reason(s) why the claimed invention would have been obvious." Applicant asserts that the Office Action does not clearly articulate any objective reason to combine Wenhao '646.9 and Dolan '153.

Wenhao '646.9 does not teach a magnetic field gradient of at least 1.5 Tesla/cm, as recited in amended claim 9. It appears that Wenhao '646.9 does not describe or suggest the use of a magnetic field gradient to separate particles from the fluid. While Wenhao '646.9 does describe removing ferromagnetic particles from the fuel, it does so on

a single permanent magnet 2, which is in contact with a fuel. (See page 4 of the translation included with the Office Action, last paragraph.) As is shown in FIG. 2 of Wenhao '646.9, permanent magnet 2 interrupts fluid flow and is described as adsorbing the ferromagnetic substance. The substance appears to be an impurity (i.e. a particle that is not intentionally added) in the fuel. (See translation of Wenhao '646.9 attached to Office Action, unmarked page 1.)

This rejection relies on Dolan '153 for disclosing a magnetic field gradient of 1.5 Tesla/cm. The Office Action acknowledges that Dolan '153 teaches an apparatus for "separating, immobilizing, and quantifying biological substances" (See Office Action, page 4.) Indeed, Dolan '153 describes a method of immobilization of microscopic entities, which enables separation of the entities from a fluid. (See Dolan '153, column 6, ll. 18-24.) In the preferred embodiment, Dolan '153 describes use of magnetic particles of less than about 200 nm in size, that are superparamagnetic, and that do not contain a complete magnetic domain. (See Dolan '153, column 8, ll. 60-66.) Therefore, the particles are not readily separable from solution even with powerful electromagnets. (See Dolan '153, column 9, ll. 3-6.) More importantly, the particles are intentionally added to the fluid to capture targeted biological cells. Dolan '153 relies on a specifically designed vessel 10, which is placed in a specific orientation relative to a magnetic field gradient between two opposing magnetic poles, to separate the added, superparamagnetic particles. Furthermore, this operation appears to be performed taking into account gravitational settling and does not mention pumping or forcing flow through the vessel or fluid movement relative to the magnetic field gradient.

Unlike Dolan '153, Wenhao '646.9 describes separation of ferromagnetic particles by capturing them on the exposed surface of a single magnet. The particles appear to be an impurity (i.e., a particle that is not intentionally added), and the fluid, unlike Dolan '153, is moving relative to the magnet 2. Furthermore, Applicant's amended claim 9 recites that the gap between the poles of the permanent magnet is less than 0.5 mm. The Office Action indicates that Wenhao '646.9 discloses a gap of 0.5 mm. (See Office Action, page 4, second paragraph.) However, Wenhao '646.9 fails to disclose or suggest a gap of less than 0.5 mm. The Office Action fails to acknowledge the difference between the gap of Wenhao '646.9 and the gap recited in claim 9. This rejection is improper because Wenhao '646.9 fails to disclose or suggest a gap of less than 0.5 mm. To the contrary, Wenhao '646.9 consistently describes a gap between magnets of 0.5 to 2.0 mm.

Still further, with regard this gap recited in amended claim 9, reducing the gap based on Wenhao '646.9 would not be a matter of mere parameter optimization. A person of ordinary skill in the art must first recognize a parameter as being a result-effective variable before it may be optimized. *In re Antonie*, 195 U.S.P.Q. 6, 8 (CCPA 1977) (See M.P.E.P. §2141.02 V.) A person of ordinary skill in the art would not recognize that the gap is a result-effective variable based on these cited references. In other words, a person of ordinary skill in the art would not think to optimize the gap based on the teachings of the references. Neither of the references supplies any teaching or motivation for changing the gap distance, of the capability of varying the gap distance, or of the relationship of the gap distance to the fuel oil characteristics. Nor can a relationship between the gap and fuel oil be derived from Wenhao '646.9. Because a

person of ordinary skill in the art would not recognize the gap as being a result-effective variable from the references, such a person would not consider experimenting with the gap to arrive at the claimed "less than 0.5 mm." In fact, a person of ordinary skill in the art may well consider that, given the relatively small gap dimensions, any further reduction of the gap from the disclosed dimension of 0.5 to 2.0 mm would reduce the fuel flow through the device and would thereby reduce processing capacity. In other words, there is no objective evidence in the prior art to support the proposition that reducing the gap would provide any benefit.

The Office Action fails to establish a *prima facie* case of obviousness of claim 9. Claims 10 and 12 depend directly from amended claim 9, and add one or more additional features. For the same reasons set forth above with regard to amended claim 9, and also because neither of these two references teaches or suggests the combination of elements of either of these claims, Applicant also requests withdrawal of this rejection as to claims 10 and 12. New claims 13, 14, and 15 depend directly or indirectly from claim 9 and are patentable for at least the same reasons as explained in response to the rejection of claim 9.

Claim 1 is an independent claim with claims 2-8 depending therefrom. The Office Action acknowledges that Wenhao '646.9 does not "explicitly state the size of the gasoline particles in the dual-cavity magnetized fuel saver." (See Office Action, page 5, paragraph 6.) Applicant agrees. In fact, Wenhao '646.9 is silent as to gasoline particles or the quantitative size thereof.

The Office Action also acknowledged that Wenhao '646.9 does not teach a magnetic field intensity of 8,000 Gauss, does not teach a gap of less than 0.5 mm, and

does not teach a magnetic field gradient of at least 1.5 Tesla/cm. Yet, the Office Action nonetheless presumes that the particles recited in claims 1-8 are obtainable. There is no support in the prior art for this presumption.

Additionally, the granules of the fuel oil described in Wenhao '646.9 are not inherently of the size range claimed, and the Office Action has not satisfied the burden set forth in the MPEP to establish inherency. This burden requires more than a mere speculative assertion about the process of Wenhao '646.9. The Office Action's assertion does not satisfy the burden. Applicant cannot be required to prove a negative.

Rather, to show inherency the USPTO must supply a rationale or evidence tending to show that the fuel oil of Wenhao '646.9 necessarily has the claimed granule size. In particular, the MPEP requires that

[i]o establish inherency, the extrinsic evidence "must make clear that the missing descriptive matter is necessarily present in the thing described in the reference, and that it would be so recognized by persons of ordinary skill. Inherency, however, may not be established by probabilities or possibilities. The mere fact that a certain thing may result from a given set of circumstances is not sufficient." (Emphasis added. See M.P.E.P. §2112 IV, *In re Robertson*, 49 USPQ2d 1949, 1950-51 (Fed. Cir. 1999).)

The Office Action does not make clear that "the missing descriptive matter" is necessarily present in the cited prior art. Thus, the Office Action fails to establish a *prima facie* case of obviousness with respect to claim 1 and Applicant respectfully requests that this rejection be withdrawn.

Each of claims 2-8 depends directly or indirectly from claim 1. Therefore each includes the features of claim 1 in combination with one or more additional features. For the same reasons as set forth with regard to claim 1, and because of the one or more

additional features recited in each of these combination claims, Applicant respectfully submits that each of these claims is also patentable, and Applicant requests that these rejections be withdrawn.

V. Conclusion

Based on the amendments to the claims, and these remarks, Applicant respectfully asserts that this case is in condition for allowance and respectfully requests allowance of the pending claims.

Applicant respectfully asserts that this response is timely filed within the shortened statutory three-month period, and that no fee is due. If any charges or credits are necessary to complete this communication, please apply them to Deposit Account No. 23-3000.

Respectfully submitted,

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